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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,378

08/10/2006

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EXAMINER

ALLI, IYABO

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,378	<b>Applicant(s)</b> TANAKA ET AL.	
	<b>Examiner</b> IYABO S. ALLI	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/11/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Regarding claims 2 and 5, the phrase "can be" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims **1, 3, 4, 9-11** and **15-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hagiwara** (5,629,768).

**As to claim 1, Hagiwara** discloses emitting light to an examination object **1** whose surface is provided with a repeating pattern **54** in which unit patterns are arrayed in a regular fashion (Column 11, lines 1-3 & 38-40 and Figs. 1A and 7A), photodetecting transmitted light or reflected light from the examination object (Column 16, lines 14-17 and Fig. 1A), and observing the detected photodetection data to detect nonuniformity defects that have occurred in said repeating pattern, wherein the method for examination of nonuniformity defects of patterns **54**

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further comprises selecting and extracting light of one or a plurality of desired wavelength bands from light of a plurality of wavelength bands, and detecting nonuniformity defects of said repeating pattern **54** by using the light of the selected and extracted wavelength bands (Column 33, lines 6-12 Figs. 21B and 26A).

Although **Hagiwara** does not use the term 'nonuniformity defects' it would have been obvious to one skilled in the art at the time of the invention to know that a defect in any repetitive or continuous pattern is considered non-uniform and irregular' and will be detectable when a test is being applied to a surface containing the pattern and defects.

**As to claim 3, Hagiwara** discloses all of the claimed limitations as applied to Claim 1 above, **in addition Hagiwara** discloses wherein said examination object **1** is an image device or a photomask **47** for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 4, Hagiwara** discloses a light source **3** for emitting light to an examination object **1** whose surface is provided with a repeating pattern **54** in which unit patterns are arrayed in a regular fashion (Column 11, lines 1-3 & 38-40 and Figs. 1A and 7A), and a photodetector **26** for photodetecting transmitted light or reflected light from said examination object **1** and converting the light into photodetection data, so that the photodetection data is observed to detect nonuniformity defects that have occurred in said repeating pattern **54** (Column 16, lines 14-17 and Fig. 1A), wherein the device for examination of nonuniformity

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defects of patterns **54** further has selection and extraction means for selecting and extracting light of one or a plurality of desired wavelength bands from the light of a plurality of wavelength bands, so that nonuniformity defects of said repeating pattern **54** are detected using the light of the selected and extracted wavelength bands (Column 33, lines 6-12 and Figs. 21B and 26A).

**As to claim 9, Hagiwara** discloses all of the claimed limitations as applied to Claim 4 above **in addition Hagiwara** discloses wherein said selection and extraction means is provided with a plurality of monochromatic light sources for individually emitting light of a desired wavelength band selected from the light of a plurality of wavelength bands, and is configured to allow the light emission operation of the monochromatic light sources to be switched (Column 5, lines 30-33).

**As to claim 10, Hagiwara** discloses all of the claimed limitations as applied to Claim 4 above **in addition Hagiwara** discloses wherein said examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 11, Hagiwara** discloses all of the claimed limitations as applied to Claim 2 above **in addition Hagiwara** discloses wherein said examination object is an image device or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 15, Hagiwara** discloses all of the claimed limitations as applied to Claim 5 above **in addition Hagiwara** discloses wherein said selection and extraction means is provided with a plurality of monochromatic light sources for individually emitting light of a desired wavelength band selected from the light of a plurality of wavelength bands, and is configured to allow the light emission operation of the monochromatic light sources to be switched (Column 5, lines 30-33).

**As to claim 16, Hagiwara** discloses all of the claimed limitations as applied to Claim 5 above **in addition Hagiwara** discloses wherein said examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 17, Hagiwara** discloses all of the claimed limitations as applied to Claim 6 above **in addition Hagiwara** discloses wherein said examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 18, Hagiwara** discloses all of the claimed limitations as applied to Claim 7 above **in addition Hagiwara** discloses wherein said examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**As to claim 19, Hagiwara** discloses all of the claimed limitations as applied to Claim 8 above **in addition Hagiwara** discloses wherein said

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examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

**And as to claim 20, Hagiwara** discloses all of the claimed limitations as applied to Claim 9 above **in addition Hagiwara** discloses wherein said examination object is an image device, or a photomask for manufacturing the image device (Column 1, lines 9-12 and Figs. 4A and 7A).

5. Claims **2, 5, 8** and **14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hagiwara** (5,629,768) as applied to claims 1 and 4 above, and further in view of **Stokowski et al.** (6,727,512). (**'Stokowski'**)

**As to claim 2, Hagiwara** discloses all of the claimed limitations as applied to Claim 1 above **except for** wherein the light of the desired wavelength band to be selected and extracted is light of a wavelength band in which the type of nonuniformity defects that require examination can be detected with high sensitivity.

However, **Stokowski** teaches the light of the desired wavelength band to be selected and extracted is light of a wavelength band in which the type of nonuniformity defects that require examination can be detected with high sensitivity (Column 6, lines 8-16).

**As to claim 5, Hagiwara** discloses all of the claimed limitations as applied to Claim 1 above **except for** wherein the light of the desired wavelength band that said selection and extraction means selects and extracts is light of a

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wavelength band in which the type of nonuniformity defects that require examination can be detected with high sensitivity.

However, **Stokowski** teaches wherein the light of the desired wavelength band that said selection and extraction means selects and extracts is light of a wavelength band in which the type of nonuniformity defects that require examination can be detected with high sensitivity (Column 6, lines 8-16).

**As to claims 2 and 5 above**, it would have been obvious to one skilled in the art at the time of the invention to use the high sensitivity of **Stokowski** in the examination method of **Hagiwara** in order to identify even the minimalist of change in a pattern on a surface, minimizing the possibility of over looking a defect or imperfection on the object under test.

**As to claim 8**, in view of   discloses all of the claimed limitations as applied to Claim 1 above **except for** wherein said selection and extraction means is an analysis device for analyzing photodetection data that has been converted in a photodetector, and selecting and extracting photodetection data related to the light of a desired wavelength band from the photodetection data.

However, **Stokowski** teaches wherein said selection and extraction means is an analysis device **316** for analyzing photodetection data that has been converted in a photodetector, and selecting and extracting photodetection data related to the light of a desired wavelength band from the photodetection data (Column 7, lines 6-13 and Fig. 3).



**And as to claim 14, Hagiwara** discloses all of the claimed limitations as applied to Claim 1 above **except for** wherein said selection and extraction means is an analysis device for analyzing photodetection data that has been converted in a photodetector, and selecting and extracting photodetection data related to the light of a desired wavelength band from the photodetection data.

However, **Stokowski** teaches wherein said selection and extraction means is an analysis device **316** for analyzing photodetection data that has been converted in a photodetector, and selecting and extracting photodetection data related to the light of a desired wavelength band from the photodetection data (Column 7, lines 6-13 and Fig. 3).

**As to claims 8 and 14 above**, it would have been obvious to one skilled in the art at the time of the invention to include the analysis device of **Stokowski** in the examination device of **Hagiwara** in order to provide a suitable system that can perform the necessary adaptation procedures when testing for defects on surface of an object under test.

6. Claims **6, 7, 12** and **13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hagiwara** (5,629,768) in view of **Stokowski** (6,727,512), as applied to claims 4 and 5 above, and furthermore in view of **Fukazawa et al.** (6,654,113). (**'Stokowski'** and **'Fukazawa'**)

**As to claim 6, Stokowski** in view of **Hagiwara** discloses all of the claimed limitations as applied to Claim 4 above **except for** wherein said selection

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and extraction means is a wavelength filter for selecting, extracting, and directing to the examination object the light of a desired wavelength band from light emitted from a light source.

However, **Fukazawa** teaches wherein said selection and extraction means is a wavelength filter **13** for selecting, extracting, and directing to the examination object the light of a desired wavelength band from light emitted from a light source **11** (Column 5, lines 23-27 and Fig. 1).

It would have been obvious to one skilled in the art at the time of the invention to include the filter of **Fukazawa** in the examination device of **Stokowski** in view of **Hagiwara** in order to effectively extract unwanted wavelengths before they come in contact with the object under test.

**As to claim 7, Stokowski** in view of **Hagiwara** discloses all of the claimed limitations as applied to Claim 4 above **except for** wherein said selection and extraction means is a wavelength filter for selecting, extracting, and directing to the photodetector the light of a desired wavelength band from light directed from an examination object.

However, it would have been obvious to one skilled in the art at the time of the invention to include the filter in order to only apply desired wavelengths that correspond to the defect within the pattern on the surface of the object under test to the detection system, avoiding undesirable information being detected.

**As to claim 12, Stokowski** in view of **Hagiwara** discloses all of the claimed limitations as applied to Claim 5 above **except for** wherein said selection and extraction means is a wavelength filter for selecting, extracting, and directing to the examination object the light of a desired wavelength band from light emitted from a light source.

However, **Fukazawa** teaches wherein said selection and extraction means is a wavelength filter **13** for selecting, extracting, and directing to the examination object the light of a desired wavelength band from light emitted from a light source **11** (Column 5, lines 23-27 and Fig. 1).

It would have been obvious to one skilled in the art at the time of the invention to include the filter of **Fukazawa** in the examination device of **Stokowski** in view of **Hagiwara** in order to effectively extract unwanted wavelengths before they come in contact with the object under test.

**And as to claim 13, Stokowski** in view of **Hagiwara** discloses all of the claimed limitations as applied to Claim 5 above **except for** discloses wherein said selection and extraction means is a wavelength filter for selecting, extracting, and directing to the photodetector the light of a desired wavelength band from light directed from an examination object.

However, it would have been obvious to one skilled in the art at the time of the invention to include the filter in order to only apply desired wavelengths that correspond to the defect within the pattern on the surface of the object under test to the detection system, avoiding undesirable information being detected.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IYABO S. ALLI whose telephone number is (571)270-1331. The examiner can normally be reached on M-Thurs. 7:30a-5pm, 1st F-OFF & 2nd F- 7:30a-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IYABO S. ALLI  
Examiner  
Art Unit 2877  
February 12, 2008

/L. G. Lauchman/  
Primary Examiner, Art Unit 2877

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